Owner's Manual

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A Six Function Enhancement Card

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SECTION 1

FCC WARNING

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna

Relocate the computer with respect to the receiver

Move the computer away from the receiver

Plug the computer into a different outlet so that computer and receiver are on different branch circuts.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may findthe following booklet prepared by the Federal Communication Commission helpful:

How to Identify and Resolve Radio-TV Interference Problems." This booklet is available form the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Important-when connecting the ALPHA ASIC II to your Joy Stick, printer, and/or communication cables, shielded interface cables must be used.

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SECTION 2

Introduction

Thank you for purchasing your new ALPHA ASIC II - a flexible and power ful
six- function enhancement product for the IBM Personal Computer (PC)
family. The ALPHA ASIC II provides the following features:

-- 5-¼ inch Diskette Drive adapter

-- Parallel Printer Adapter

-- Asynchronous Communication Adapter

-- Alternate Asynchronous Communication Adapter

-- Game Control Adapter

-- Real Time Clock Calendar with battery backup

SECTION 3

5-¼ inch Diskette Drive Adapter

3.1 Description

The ALPHA ASIC II provides the interface of up to two 5-¼ inch diskette drives to
the PC/XT. The adapter uses double density, MFM format with 250nS write
preompensation. A digital phaselocked loop is used for clock and data recovery.

3.2 Programming summary

I/O address hex 3F2 -- control register (out)

Bit	Function
0	drive select 0
1	drive select 1
2	not FDC reset
3	enable INT & DMA requests
4	drive A motor enable
5	drive B motor enable
6	reserved
7	reserved

I/O address hex 3F4 -- FDC main status register (in)
I/O address hex 3F5 -- FDC data register (in/out)

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3.3 Connector informations

The interface of the diskette drive adapter is through the 34-pin connector J3. The ALPHA ASIC II is supplied with an interface cable. One end of the cable has a plastic connector that fits J3. When fitting the plastic connector to J3, make sure that pin 1 on the connector matched with pin 1 on J3 (pin 1 On the cable's connector has a V-shaped notch near it, pin 1 on J3 is designated by a "1"). The connector at other end of the cable is connected to Drive A. The connector at the middle of the connected to Drive B.

Signal Name	Connector J3 pin #	Drive A pin #	Drive B pin #
- Index	8	8	8
- Motor Enable 1	10	16	10
- Drive Select 2	12	14	12
- Drive Select 1	14	12	14
- Motor Enable 2	16	10	16
- Direction	18	18	18
- Step	20	20	20
- Write Data	22	22	22
- Write Gate	24	24	24
- Track 00	26	26	26
- Write Protect	28	28	28
- Read Data	30	30	30
- Select Head 1	32	32	32
ground	all odd pins	odd pin	odd pin

SECTION 4

Parallel Printer Adapter

4.1 Description

The ALPHA ASIC II interface one IBM type parallel matrix printer to the system. The parallel printer port is always recognized as LP51 (LPT2 if the IBM Monochrom Display Card is installed) and cannot be disabled.

4.2 Programming Summary

I/O address hex 378 -- data register (in/out)

Bit	Function
0	+data 0
1	+data 1
2	+data 2
3	+data 3
4	+data 4
5	+data 5
6	+data 6
7	+data 7

I/O address hex 379 -- status register (in)

Bit	Function
0	not used
1	not used
2	not used
3	-error
4	+select
5	+paper end
6	-acknowledge
7	+busy

I/O address hex 37A -- control register (in/out)

Bit	Function
0	+strobe
1	+auto feed
2	-initialize printer
3	+select input
4	+IRQ enable
5	not used
6	not used
7	not used

4.3 Connector informations

Signal Name	J5 pin #	IBM Matrix Printer
-Strobe	1	1
+Data 0	2	2
+Data 1	3	3
+Data 2	4	4
+Data 3	5	5
+Data 4	6	6
+Data 5	7	7
+Data 6	8	8
+Data 7	9	9
-Ack	10	10
+Busy	11	11
+Pe	12	12
+Slct	13	13
-Auto fd xt	14	14
-Error	15	32
-Init	16	31
-Slct in	17	36
Ground	18-25	16,19-30,33

SECTION 5

Asynchronous Communication Adapter

5.1 Description

The ALPHA ASIC II has two asynchronous communication ports. COM1 is standard and COM2 is optional. However, the ALPHA ASIC II uses both COM1 and COM2 I/O adsdresses even when the optional COM2 is not installed. The user should not install other asynchronous communication cards with COM1 or COM2 enabled to the system. Both asynchronous communication ports cannot be disabled.

5.2 Programming Summary

I/O address hex 3F8 (2F8 if COM2) - Rx buffer reg. (in)
                                      Tx holding reg. (out)
                                      Divisor latch LS (in out)
I/O address hex 3F9 (2F9 if COM2) - Int. enable reg. (in out)
                                      Divisor latch MS (in out)
I/O address hex 3FA (2FA if COM2) - Intr indent. reg. (in)
I/O address hex 3FB (2FB if COM2) - Line cnt'l reg. (in out)
I/O address hex 3FA (2FC if COM2) - Modem cnt'l reg. (in out)
I/O address hex 3FD (2FD if COM2) - Line status reg. (in)
I/O address hex 3FE (2FE if COM2) - Modem status reg. (in)

5.3 Connector Informations

Both asynchronous communication ports are DTE (Data Terminal Equipment) type and use RS-232C interface. Both ports are used with connecting cables (one cable is supplied with the card) which adapt J1 and J2, for COM1 and COM2 respectively, to the standard DB25 male connectors. One end of the cable has a plastic connector that fits J1 (J2 for COM2). When fitting the plastic connector to J1/J2, make sure that pin 1 on the connector matched with pin 1 on J1 J2 (pin 1 on the cable's connector has a V-shaped notch near it, pin 1 on J1 J2 is designed by a "1"). The connector at the other end of the cable is a 25-pin D-shaped male connector which can be mounted to an empty slot of the computer.

COM1 & COM2:

RS-232C Name	Async Port J1, J2 pin #	DTE DB-25 pin #	Signal Name
AA	10	1	Chassis Ground
BA	5	2	TX (Transmit Data)
BB	3	3	RX (Receive Data)
CA	4	4	RTS (Request To Send)
CB	6	5	CTS (Clear To Send)
CC	2	6	DSR (Data Set Ready)
AB	9	7	SG (Signal Ground)
CF	1	8	DCD (Data Carrier Detect)
CD	7	20	DTR (Data Terminal Ready)
CE	8	22	RI (Ring Indicator)

SECTION 6

Game Control Adapter

6.1 Description

The game port interface four buttons to the system and uses the NE558 type qua-timer to geneate time durations corresponding to the position of the Joy Stick/Game Paddle. The game port cannot be disabled.

6.2 Programming summary

I/O address hex 201 -- Trigger the quad-timer (out)

Timer and button input (in):

Bit	Function	
	Joy Stick : Game Paddle	
0	A-X coord.	A coord.
1	A-Y coord.	B coord.
2	B-X coord.	C corrd.
3	B-Y coord.	D coord.
4	A button 1	A button
5	A button 2	B button
6	B button 1	C button
7	B button 2	D button

6.3 Connector informations

Game Port J4 Pin #	IBM-Type Joystick
1	+ 5V dc
2	Button 4
3	Position 0
4	Ground
5	Ground
6	Position 1
7	Button 5
8	+5V dc
9	+5V dc
10	Button 6
11	Position 2
12	Ground
13	Position 3
14	Button 7
15	+ 5V dc

SECTION 7

The Real Time Clock Calendar

7.1 Description

The ALPHA ASIC II Real Time Clock Calendar employs an advanced microprocesser compatible real time clock chip and has the following features:

1. 24-hour clock
2. 100-year calendar (1984 - 2083, automatic leap year)
3. battery standby power supply
4. replaceable lithium battery (life approx. two years)
5. fully PC-DOS compatible

The real time clock cannot be disabled

7.2 Using the clock calendar

Your ALPHA ASIC II is supplied with two utilities: RAMCLK.COM and SETCLK.COM. the RAMCLK.COM is used to answer the TIME and DATE prompts which the DOS operating system issues each time you boot up the system. The SETCLK.COM is used to set the time and date on the ALPHA ASIC II.

Setting the time and date on the ALPHA ASIC II
Step 1
    Prepare a DOS diskette with the SETCLK.COM on it.
Step 2
    Boot up the system and leave the screen at the A prompt.
Step 3
    Enter the DOS command DATE and enter the new date or press (ENTER) if no change is necessary.
Step 4
    Enter the DOS command TIME and enter the new time or press (ENTER) if no change is necessary.
Step 5
    Enter the following instruction to transfer the TIME & DATE to the Real Time Clock Calendar: SETCLK (ENTER)

Preparing an automatic TIME and DATE initialization DOS diskette:
Step 1
    Prepare a DOS diskette with the RAMCLK.COM program on it.
Step 2
    Boot up the system and leave the screen at the A prompt.
Step 3
    Create an AUTOEXEC.BAT file with the RAMCLK command in it. If your diskette already has an AUTOEXEC.BAT file, add the RAMCLK command precedes all other command(s).
    You may use the following sequence to create or alter the AUTOEXEC. BAT file:

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COPY CON: AUTOEXEC.BAT (ENTER)
RAMCLK (ENTER)

(FUNCTION KEY F6) (ENTER)

Now your DOS diskette will automatically initialize the TIME and DATE each time
you boot up the system.

7.3 Using the TIMER program

The NEW version of the TIMER program ver 2.x is support the ALPHA ASIC
II REAL TIME CLOCK.

TIMER/I ----- Read current TIME and DATE

TIMER/I ----- Initial setting current TIME and DATE to system clock.

TIMER/S ----- Set current TIME and DATE to system clock.

TIMER/? ----- Help menu

TIME FORMAT   HOUR: MINUTE: SECOND

DATE FORMAT   MONTH-DAY-YEAR

                    (Every item have two digits)

7.4 Programming summary

I/O address hex 2C0 -- clock chip control register (out)

Bit	Function
0	not used
1	not used
2	not used
3	write data enable
4	address write
5	read
6	write
7	chip select

I/O address hex 2C1 -- data holding register for write and address write (out)
-- read data (in)

Bit	Function
0	data 0
1	data 1
2	data 2
3	data 3
4	not used
5	not used
6	not used
7	not used

SECTION 8

Installation

1. Turn off the computer and all attached peripherals, unplug the power cable from the outlet and then remove all cables from the computer. Remove the computer cover.

2. Select an empty slot and remove the slot's rear panel cover by removing the screw on the top. Save the screw.

3. Align the ALPHA ASIC II with the expansion slot and press it into place. Secure the board with the screw removed in step 2.

4. Install the diskette drive cable (refer to section 3.3) and the asynchronous communication adapter cable (refer to section 5.3).

5. Replace the computer cover and reattach all cables to the rear of the computer. Plug the power cable into an outlet.

6. Run the IBM diagnostics program to confirm that the system is running properly. The diagnostic routines do not test the clock calendar.